NARUC

Winter Committee Meetings

Committee On Water

LSLR
COLLABORATIVE

LEAD SERVICE LINE REPLACEMENT COLLABORATIVE

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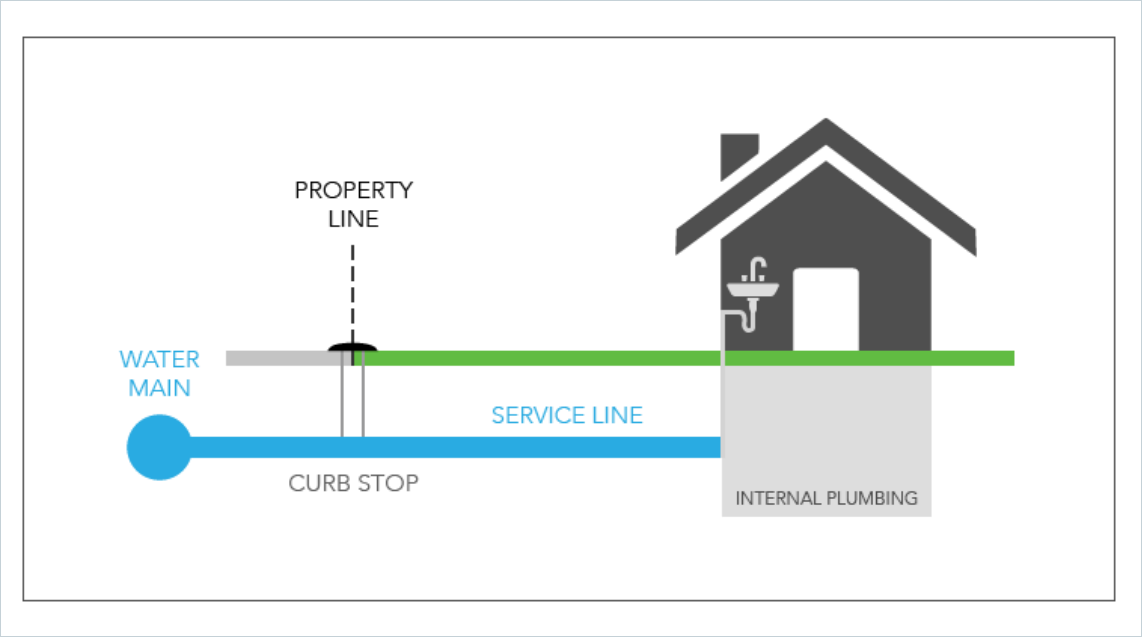
- What is the Collaborative?
  - A diverse collaborative of national public health, water utility, environmental, labor, consumer, housing, and state and local government organizations

- What is the goal of the Collaborative?
  - To accelerate voluntary lead service line (LSL) replacement in communities across the United States

WHAT ARE LSLS, AND WHY ARE THEY IMPORTANT?

- LSL: A lead pipe connecting the water main under the street to a home or other building type
- LSLs are the largest potential source of lead in contact with drinking water.



WHAT ARE THE COLLABORATIVE'S GUIDING PRINCIPLES?

1. Removal of LSLs provides an opportunity to significantly reduce the risk of exposure to lead in drinking water.
2. LSL replacement initiatives must be designed to ensure residents are protected during and after removal, and that the work is done in a cost effective manner.
3. LSL replacement initiatives should address barriers to participation so that consumers served by LSLs can benefit equitably regardless of income, race, or ethnicity.
4. A collaborative, community-based approach can help provide the strong foundation needed for success.

WHAT ARE THE COLLABORATIVE'S GUIDING PRINCIPLES?

5. Innovative models are needed to help communities find the tools, strategies, and resources needed to replace LSLs based on the latest science and current best practices.
6. By providing models for replacement, it is possible to advance support at all levels of government and in different types of communities.
7. Successful LSL replacement initiatives will take careful planning and time.
8. This effort is focused on mechanisms to support local action, not on EPA's efforts to revise the Lead and Copper Rule.

WHAT IS THE COLLABORATIVE DOING?

- Preparing information, tools, and models for LSL replacement
- Providing information on achievable, cost-effective, safe LSL replacement options
- Capturing and sharing lessons learned in communities
- Technical assistance and facilitation in forming initiatives

WHAT RESOURCES DOES THE COLLABORATIVE CURRENTLY PROVIDE?

- Web-based tools and resources intended to support and accelerate full LSL replacement initiatives

lslr-collaborative.org

WHAT IS INCLUDED ON THE WEBSITE?

Tools, resources, and additional information organized by topic:

1. Roadmap
2. Replacement Practices
3. Policies
4. Resources
5. About Us

The Collaborative encourages ongoing feedback to improve these tools and resources

ROADMAP

- Poses questions to help local communities formulate a plan for LSL replacement and tailor initiatives to local circumstances

- Provides information critical to plan development and implementation, such as legal factors and funding strategies

REPLACEMENT PRACTICES

- Technical information and tools needed to successfully carry out LSL replacement
- Topics include:
  - Approaches to replacement
  - Preparing an LSL inventory
  - Understanding replacement techniques
  - Communicating about LSL replacement
  - Coordinating and implementing replacement

POLICIES

- Opportunities for a variety of national, state and local government as well as private sector players to support LSL replacement initiatives
- Local and state examples of effective policy or action

The Local Need	State and Local Examples	Opportunities to Support Efforts

The Collaborative is not an advocacy organization. Its members may advocate for federal and state policy changes as individual organizations and not as representatives of the Collaborative.

OTHER RESOURCES AVAILABLE ON THE WEBSITE

- Introductory information on LSL replacement
- Equity considerations
- Schools and childcare facilities
- Research needs
- Case studies

COMMUNITY LEADERS AND ELECTED OFFICIALS

- **Why is LSL replacement important to you?**
  - There is no safe level of lead, and prenatal exposure and exposure to young children is particularly dangerous.

- **What can you do?**
  - Work with drinking water professionals, and public health professionals to consider an LSL replacement initiative.
  - Help build consensus for the initiative by ensuring the replacement process engages all voices in the community with inclusive messaging.
  - Advance policies that support local replacement initiatives, including equitable funding options.

FUNDING SOURCES

- How is the Collaborative funded?
  - Funding has been provided by the W.K. Kellogg Foundation and the Pisces Foundation. The Collaborative is currently and will continue to be funded by in-kind contributions from its members.

W.K. KELLOGG FOUNDATION®

CURRENT MEMBERS

- American Public Health Association
- American Water Works Association*
- Association of Metropolitan Water Agencies*
- Association of State Drinking Water Administrators
- Blue Green Alliance
- Children's Environmental Health Network*
- Clean Water Action*
- Environmental Defense Fund*
- Justice and Sustainability Associates
- Learning Disabilities Association of America
- National Center for Healthy Housing
- National Association of County and City Health Officials
- National Association of State Utility Consumer Advocates
- National Association of Water Companies*
- National Conference of State Legislatures
- National Environmental Health Association
- National Rural Water Association
- Natural Resources Defense Council
- RESOLVE*
- Rural Community Assistance Partnership
- Trust for America's Health
- United Parents Against Lead
- Water Research Foundation

* Steering Committee Members

Questions?

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Where Intelligence
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2017 NARUC Winter Conference

LSLR Collaborative Panel

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LSLR - Water Utility Goals

- Develop strategy and approach for LSL replacement
- Prepare an Inventory of LSLs
- Replacement plan for **known** LSLs
- For **unknown LSLs,** Identify tools and techniques for LSL replacement
  - Current technologies detect lead levels in water samples
    - Use mass spectrometer to analyze samples
    - Andalyze: heavy metal detection using DNA sensors
    - Radom Corp: trace metal analysis
  - **Utility needs to identify the service line material!**

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Water Research Foundation
Project 4693

- Awarded to American Water
- Goals
  - Evaluate water service line material identification technologies, techniques and strategies
  - Highlight the existing technologies and indirect methods currently in practice
  - Demonstrate, evaluate at least two new technologies
    - Capable of material discrimination
    - Non-invasive, inexpensive and quick
  - Develop a prototype to discriminate metal

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Participating Utilities

- City of Vancouver, Vancouver, WA, United States
- Denver Water, Denver, CO, United States
- Greater Cincinnati Waterworks, Cincinnati, OH, United States
- Halifax Water, Halifax, NS, Canada
- Indiana American Water Greenwood, IN, United States
- Lansing Board of Water and Light Lansing, MI, United States
- Madison Water Utility, Madison, WI, United States
- Pennsylvania American Water, Hershey, PA, United States
- South Central Connecticut Regional Water Authority, New Haven, CT, United States
- Virginia American Water, Hopewell, VA, United States
- Suez (United Water) Idaho

Project Challenge

- Water utilities lack a complete inventory of service lines
  - Therefore no one knows exactly where the service lines are lead
- **Ownership of service lines a mix of public and private**
- Replacement will be costly whoever pays
  - Typical estimate of $100/ft to dig-up and replace
- No viable, direct, accurate and cost effective method is available
- Research suggests that partial replacement by utility makes lead problem worse
  - Water, dewatering
  - Galvanic (corrosion) action

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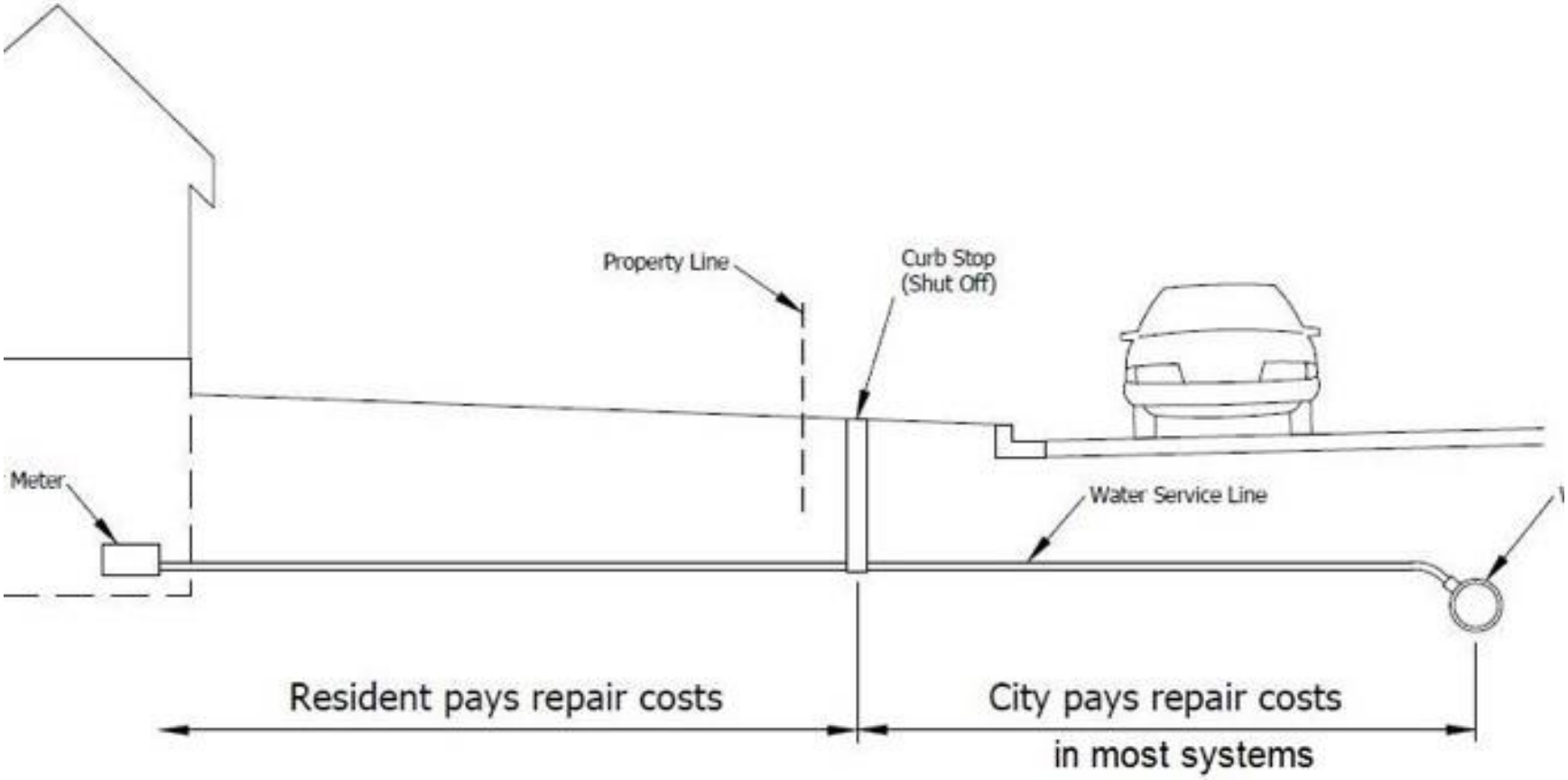
Challenge – Service Line Variants



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Project Stages

- Phase 1: Current State of Industry
  - Identify current practices in the utilities
  - Revisit WRF report #813, "*Innovation Techniques for Locating Lead Service Lines*", and review associated technology advancements
  - Review other prospective technologies
- Phase 2: Selecting Vendors for Field Studies
  - Piloting of technologies at selected utilities
  - Evaluation of technology or prototypes
- Phase 3: Case Studies
  - Multiple case studies will be prepared
    - Participating utilities, literature review

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Prospective Technologies

- Acoustics
- Pulse Induction
- Gradiometer
- Long Range Magnetic Locators
- Terahertz Remote Sensing
- Very Low Frequency (VLF) Phase Shifting

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Pilot Study

- Two technologies will be identified and field tested
- Targeted testing
  - Material discrimination of service line (direct service line identification)
  - Ability to look in two directions (customer side and right of way side)
  - Indirect method of testing (involve two or more methods)
  - Process of elimination of pipe material

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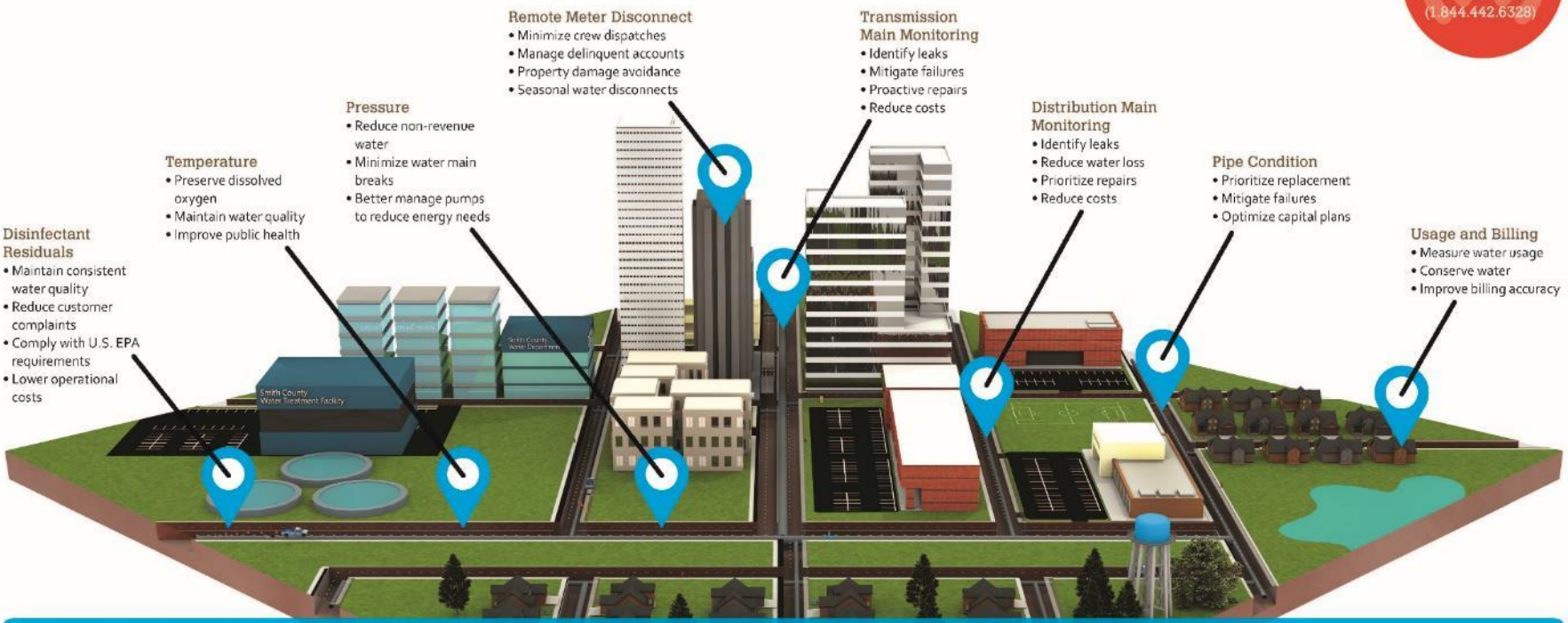
Smart Water Utility Vision

IoT-Driven Water Networks

Visibility, Control and Optimization of Utility Operations

To learn more about IoT-enabled solutions, call 1.844.4.H2O.DATA (1.844.442.6328)



Flexible Backhaul Approaches

Mueller Systems, LLC and its affiliates ("Mueller") offer flexible backhaul options for utilities, giving them the opportunity to migrate their data as they grow into full IoT-enabled smart cities. In several cases, this flexibility allows water utilities to implement new technology at their own pace, enabling them to expand over time. Mueller's offerings can transmit and collect data via a radio, cellular or the LoRa-based Mi.Net® network. By offering these backhaul options, Mueller is able to accommodate utilities of all sizes at any point in their transition to smart cities technologies.

Radio Frequency

Radio frequency (RF) is the most basic of the backhaul options, ideal for smaller utilities with fewer end points and less extensive networks. Data travels from one point to another via the RF spectrum. Once the network is established, there are no monthly costs and the data is secure.

Cellular

For utilities interested in implementing IoT-based leak detection and pressure management solutions, cellular backhaul is a good option. As specific telecom carriers host cellular networks, there is no need for a utility to create its own fixed radio network. This enables utilities to quickly deploy technologies into the water network.

LoRa

Utilities seeking an option with the most IoT capabilities should examine migrating to a LoRa-based network. Short for "low power, long range," LoRa is an RF modulation technique that offers high-power transmissions and increased range over traditional systems. This option reduces the noise that can cause interference in basic RF transmissions, allowing for longer-range data retrieval. LoRa is not a proprietary network, which allows utilities to connect to any IoT-enabled equipment.

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